

Pre-Calculus

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Content	Skills	Learning Targets	Assessment	Resources & Technology
<p>CEQ: *How is the world of functions described? *What is the purpose of trigonometry and how is it used?</p> <p><i>UEQ:</i> <i>What concepts can be used to draw graphs?</i> <i>What are the different characteristics of functions?</i> <i>What are the different type of functions and how are they manipulated?</i> <i>How are graphs and functions used to model real-world applications?</i></p> <p>A. Rectangular Coordinates</p>	<p>A. Rectangular Coordinates A1. Calculate distance between two points A2. Calculate the midpoint between two points A3. Use rectangular coordinates to model and solve real-life problems</p> <p>B. Graphs B1. Sketch graph by plotting points, using symmetry, and x- and y-intercepts B2. Determine if a graph has symmetry in the x-axis, y-axis, and/or origin B3. Write and graph equations of circles B4. Calculate slope, write and graph linear equations using</p>	<p>A1. LT I can calculate distance between two points. (Section 1.1)</p> <p>A2. LT I can calculate the midpoint between two points. (Section 1.1)</p> <p>A3. LT I can use the coordinate plane and formulas to model and solve real-life problems. (Section 1.1)</p> <p>B1. LT1 I can identify intercepts of equations and use them to graph. (Section 1.2)</p> <p>B1. LT2 I can use symmetry to assist in sketching graphs. (Section 1.2)</p>	<p>A. Rectangular Coordinates B. Graphs C. Functions</p> <p>CSA: A1-A3, B1-B6, C1-C2 Chapter 1.1-1.5 Test (See shared folder)</p> <p>CSA: C3-C7 Chapter 1.6-1.9 Test (See shared folder)</p> <p>D. Quadratics E. Higher Degree Polynomials F. Complex Numbers G. Rational Functions H. Inequalities</p> <p>CSA: D1-D4, E1-E5,</p>	

<p>A1. Distance Formula A2. Midpoint Formula A3. RealWorld Applications</p>	<p>multiple forms including parallel and perpendicular lines B5. Use graphs to model and solve real-life problems</p>	<p>B2. LT I can determine if a graph has symmetry in the x-axis, y-axis, or origin. (Section 1.2)</p>	<p>F1-F5, G1-G4, H1-H2 Chapter 2 Test (See shared folder)</p>
<p>B. Graphs B1. Representation by Point Plotting B2. Circles B3. Linear Equations B4. Real-Life Applications</p>	<p>C. Functions C1. Define and evaluate functions using real-life applications C2. Identify and describe functions and their graphs by using domain, range, zeros, maximums, minimums, odd, even, increasing and decreasing</p>	<p>B3. LT I can write equations and graphs of circles. (Section 1.2)</p> <p>B4. LT1 I can calculate slope of a line. (Section 1.3)</p>	<p>I. Exponential Functions J. Logarithmic Functions</p> <p>CSA: I1-I4, J1-J5, Chapter 3 Test (See shared folder)</p>
<p>C. Functions C1. Definition and Evaluation C2. Graphs C3. Family of Parent Functions C4. Transformations C5. Combinations C6. Inverses</p>	<p>C3. Recognize parent functions, identify and graph linear, absolute value, quadratic, cubic, square root, reciprocal, greatest integer, and piecewise functions. C4. Manipulate and graph functions by rigid and nonrigid transformations</p>	<p>B4. LT2 I can write and graph linear equations of a line in slope-intercept, point-slope, & standard form. (Section 1.3)</p>	<p>CSA: FINAL EXAM (Chapters 1-3)</p>
<p><i>UEQ:</i> What are the characteristics and behaviors of quadratic, polynomial, and</p>		<p>B4. LT3 I can use the concepts of parallel and perpendicular slopes to write equations. (Section 1.3)</p>	<p>K. Angles L. Trigonometric Functions</p> <p>CSA: K1-K4, L1-L5, Chapter 4.1-4.4 Test (See shared folder)</p>

<p><i>rational functions? What are complex numbers and how are they manipulated? How are quadratic, polynomial, and rational functions used to model and solve real-life models?</i></p> <p>D. Quadratics D1. Graphs D2. Equations D3. Real-Life Applications</p> <p>E. Higher Degree Polynomials E1. Using Zeros E2. Leading Coefficients E3. Zeros E4. Division</p> <p>F. Complex Numbers F1. Representation and Manipulation F2. Solutions</p>	<p>C5. Combine functions using addition, subtraction, multiplication, division, and composition as well as using combinations to model and solve real-life problems C6. Define and identify functions that are one-to-one C7. Find and verify inverse functions graphically and algebraically</p> <p>D. Quadratics D1. Identify vertex, axis of symmetry, and intercepts of quadratic function D2. Analyze and sketch graphs of quadratic functions in various forms D3. Write equations of parabolas in various forms D4. Use polynomials to model and solve</p>	<p>B5. LT I can use functions to model and solve real-life problems. (Section 1.4)</p> <p>B6. LT I can find the domain of a function. (Section 1.4)</p> <p>C1. LT I can define and evaluate functions using real-life applications. (Section 1.5)</p> <p>C2. LT I can identify & describe functions and their graphs by using domain, range, zeros, maximums, minimums, odd, even, increasing, and decreasing. (Section 1.5)</p> <p>C3. LTI can define, graph and evaluate functions, including piecewise functions. (Section 1.6)</p>	<p>M. Graphs of Trigonometric Functions N. Real-Life Applications</p> <p>CSA: M1-M4, N1 Chapter 4.5-4.8 Test (See shared folder)</p> <p>O. Law of Sines P. Law of Cosines CSA: O1-O3, P1-P2 Chapter 6 QUIZ (See shared folder)</p> <p>Q. Fundamental Trigonometric Identities R. Trigonometric Equations S. Trigonometric Formulas</p> <p>CSA: Q1-Q3, R1-R2, S1 Chapter 5 Test (See shared folder)</p>	
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<p>G. Rational Functions G1. Domain G2. Asymptotes G3. Graphs G4. Real-Life Applications</p> <p>H. Inequalities H1. Solutions H2. Real-Life Applications</p> <p><i>UEQ:</i></p> <p><i>What is an exponential function and how are they evaluated and graphed?</i></p> <p><i>What is a logarithmic function and how are they evaluated and graphed?</i></p> <p><i>How are exponential and logarithmic functions used to model and solve real-life problems?</i></p>	<p>real-life problems</p> <p>E. Higher Degree Polynomials E1. Use zeros to write a polynomial function. E2. Use the leading coefficient test to determine the end behaviors of polynomial functions E3. Use zeros and end behaviors to sketch graph of polynomial function E4. Use factoring, and/or graphing calculator to find and graph the zeros of a polynomial function E5. Use long and synthetic division to divide polynomials, including application of the remainder and factor theorems</p> <p>F. Complex Numbers F1. Simplify, write, add, subtract, multiply, and divide expressions containing</p>	<p>C.4A LT I can identify and graph parent functions. (Section 1.6)</p> <p>C.4.B LT I can write and graph linear equations in function form. (Section 1.6)</p> <p>C.4.C LT I can graph and evaluate the greatest integer function. (Section 1.6)</p> <p>C.4.D LT I can manipulate and graph functions using rigid and non-rigid transformations. (Section 1.7)</p> <p>C.5. LTI can combine functions using addition, subtraction, multiplication, division, and composition. (Section 1.8)</p> <p>C.6. LT I can identify functions that are</p>	<p>CSA: FINAL EXAM (Chapters 4-6)</p>	
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<p>I. Exponential Functions I1. Characteristics and Evaluation I2. Graphs I3. Equations</p> <p>J. Logarithmic Functions J1. Characteristics and Evaluation J2. Graphs J3. Properties J4. Change-of-Base Formula J5. Equations</p> <p><i>UEQ: What are trigonometric functions and how are they worked with? How are trigonometric functions graphed and transformed? How are trigonometric functions used to</i></p>	<p>complex numbers F2. Find complex solutions of quadratic equations F3. Apply the fundamental theorem of algebra F4. Find rational zeros of a polynomial function F5. Find complex zeros of a polynomial function</p> <p>G. Rational Functions G1. Determine the domain of a rational function G2. Find the horizontal and vertical asymptotes of rational functions G3. Analyze and sketch graphs of rational functions G4. Use rational functions to model and solve real-life problems</p> <p>H. Inequalities</p>	<p>one-to-one. (Section 1.8)</p> <p>C7. LT I can find and verify inverse functions graphically and algebraically. (Section 1.9)</p> <p>D1. LT I can identify the vertex, axis of symmetry, and intercepts of a quadratic function. (Section 2.1)</p> <p>D2. LT I can analyze and sketch graphs of quadratic functions in standard, vertex, and intercept form. (Section 2.1)</p> <p>D3. LT I can write equations of parabolas in standard, vertex, and intercept form. (Section 2.1)</p> <p>D4. LT I can use polynomials, including finding maximums and</p>		
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<p><i>model and solve real-life problems?</i></p>  <p>K. Angles </p> <p>K1. Description K2. Measurement K3. Arc Length and Area of a Circular Section K4. Real-Life Applications</p> <p>L. Trigonometric Functions</p> <p>L1. Unit Circle L2. Evaluation L3. Right Triangle Trigonometry L4. Fundamental Trigonometric Identities L5. Trigonometric Functions of</p>	<p>H1. Solve polynomial and rational inequalities H2. Use inequalities to model and solve real-life problems</p> <p>I. Exponential Functions</p> <p>I1. Recognize and evaluate exponential functions with base a and base e I2. Graph exponential functions I3. Solve exponential equations by applying the one-to-one property I4. Use exponential functions to model and solve real-life problems</p> <p>J. Logarithmic Functions</p> <p>J1. Recognize, simplify, and evaluate logarithmic functions with base a, base 10 (common log) and</p>	<p>minimums, to model and solve real-life problems. (Section 2.1)</p> <p>E1. LT I can use zeros to write a polynomial function. (Section 2.2)</p> <p>E2. LT I can use the leading coefficient test to determine the end behaviors of polynomial functions. (Section 2.2)</p> <p>E3. LT I can use zeros and end behaviors to sketch graph of polynomial function (Section 2.2)</p> <p>E4. LT I can use factoring and a graphing calculator to find and graph the zeros of a polynomial function. (Section 2.2)</p> <p>E5. LT I can use long and synthetic division to divide polynomials,</p>		
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<p>Any Size Angle</p> <p>M. Graphs of Trigonometric Functions M1. Graphs M2. Translations M3. Inverse Functions M4. Compositions of Trigonometric Functions</p> <p>N. Real-Life Applications N1. Models of Trigonometric Functions</p> <p><i>UEQ:</i> <i>How is trigonometry used to solve non-right triangles?</i></p> <p>O. Law of Sines O1. Solving O2. Ambiguous Case O3. Finding Area</p> <p>P. Law of Cosines</p>	<p>base e (natural log) J2. Graph logarithmic functions J3. Apply the properties of logarithms to evaluate, rewrite, expand, or condense logarithmic expressions J4. Use the change-of-base formula to rewrite and evaluate logarithmic expressions J5. Solve logarithmic equations</p> <p>K. Angles K1. Define and describe angles in trigonometry K2. Measure angles using radians and degrees K3. Calculate the length of an intercepted arc of a circle and the area of a circular sector K4. Calculate the linear and angular</p>	<p>including application of the remainder and factor theorems. (Section 2.3)</p> <p>F1. LT I can simplify, write, add, subtract, multiply, and divide expressions containing complex numbers. (Section 2.4)</p> <p>F2. LT I can find complex solutions of quadratic equations. (Section 2.4)</p> <p>F3. LT I can apply the fundamental theorem of algebra. (Section 2.5)</p> <p>F4. LT I can find rational zeros of a polynomial. (Section 2.5)</p> <p>F5. LT I can find complex zeros of a polynomial and know they occur in pairs. (Section 2.5)</p>		
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<p>P1. Solving P2. Heron's Formula</p> <p><i>UEQ:</i> <i>What are the fundamental trigonometric identities and formulas and how are they used?</i></p> <p>Q. Fundamental Trigonometric Identities Q1. Recognition Q2. Evaluation and Simplification Q3. Verification</p> <p>R. Trigonometric Equations R1. Evaluation R2. Evaluation of Multiple Angle Equations</p> <p>S. Trigonometric Formulas S1. Evaluation</p>	<p>speed</p> <p>L. Trigonometric Functions L1. Identify the unit circle and define the six trigonometric functions L2. Evaluate trigonometric functions using the unit circle, a calculator, and the domain and period of the sine and cosine functions L3. Evaluate trigonometric functions of acute angles using right triangle definitions L4. Evaluate trigonometric functions by applying trigonometric identities L5. Evaluate the trigonometric functions of any size angle using x, y, and r ratios and reference</p>	<p>G1. LT I can determine the domain of a rational function. (Section 2.6)</p> <p>G2. LT I can find the horizontal and vertical asymptotes of rational functions. (Section 2.6)</p> <p>G3. LT I can analyze and sketch graphs of rational functions. (Section 2.6)</p> <p>G4. LT I can use rational functions to model and solve real-life problems. (Section 2.6)</p> <p>H1. LT I can solve polynomial and rational inequalities. (Section 2.7)</p> <p>H2. LT I can use inequalities to model and solve real-life</p>		
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	<p>angles</p> <p>M. Graphs of Trigonometric Functions</p> <p>M1. Sketch the graphs of the six trigonometric functions</p> <p>M2. Use amplitude and period to sketch translations of the six trigonometric graphs</p> <p>M3. Evaluate and graph the inverse sine, cosine, and tangent functions</p> <p>M4. Evaluate compositions of trigonometric functions</p> <p>N. Real-Life Applications</p> <p>N1. Solve real-life problems involving trigonometric functions, right triangles, and directional bearings</p>	<p>problems. (Section 2.7)</p> <p>I1. LT I can recognize and evaluate exponential functions with base a and base e. (Section 3.1)</p> <p>I2. LT I can graph exponential functions. (Section 3.1)</p> <p>I3. LT I can solve exponential equations by applying the one-to-one property. (Section 3.1)</p> <p>I4. LT I can use exponential functions to model and solve real-life problems (Section 3.1)</p> <p>J1. LT I can recognize, simplify, and evaluate logarithmic functions with base a, base 10 (common log) and</p>		
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	<p>O. Law of Sines S1. Use the law of sines to solve triangles S2. Analyze and use given information to determine if there are 0, 1, or 2 triangles S3. Find the area of a triangle using SAS area</p> <p>P. Law of Cosines T1. Use the law of cosines to solve triangles T2. Apply Heron's formula to find the area of a triangle</p> <p>Q. Fundamental Trigonometric Identities O1. Recognize and write the fundamental identities O2. Use the fundamental trigonometric identities to evaluate, simplify, and rewrite the trigonometric functions and</p>	<p>base e (natural log).(Section 3.2)</p> <p>J2. LT I can graph logarithmic functions.(Section 3.2)</p> <p>J3. LT I can apply the properties of logarithms to evaluate, rewrite, expand, or condense logarithmic expressions. (Section 3.3)</p> <p>J4. LT I can use the change-of-base formula to rewrite and evaluate logarithmic expressions. (Section 3.3)</p> <p>J5. LT I can solve logarithmic equations. (Section 3.4)</p> <p>K1. LT I can define and describe angles in trigonometry. (Section 4.1)</p> <p>K2. LT I can measure</p>		
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	<p>expressions O3. Verify trigonometric identities</p> <p>R. Trigonometric Equations P1. Solve trigonometric equations using algebraic techniques, factoring, the quadratic formula, and inverse trigonometric functions P2. Solve trigonometric equations that involve multiple angles</p> <p>S. Trigonometric Formulas Q1. Use sum and difference, double-angle, half-angle formulas to rewrite and evaluate trigonometric functions.</p>	<p>angles using radians and degrees. (Section 4.1)</p> <p>K3. LTI can calculate the length of an intercepted arc of a circle and the area of a circular sector. (Section 4.1)</p> <p>K4. LT I can calculate linear and angular speed (Section 4.1)</p> <p>L1. LT I can identify the unit circle and define the six trigonometric functions. (Section 4.2)</p> <p>L2. LT I can evaluate trigonometric functions using the unit circle, a calculator, and the domain and period of the sine and cosine functions. (Section 4.2)</p>		
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		<p>L3. LT I can evaluate trigonometric functions of acute angles using right triangle definitions. (Section 4.3)</p> <p>L4. LT I can evaluate and simplify trigonometric functions by applying trigonometric identities. (Section 4.3)</p> <p>L5. LT I can evaluate the trigonometric functions of any size angle using x, y, and r ratios and reference</p>		
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		<p>angles. (Section 4.4)</p> <p>M1. LT I can sketch the</p>		

		<p>graphs of the six trigonometric functions. (Section 4.5 & 4.6)</p> <p>M2. LT I can use amplitude and period to sketch translations of the six trigonometric graphs. (Section 4.5 & 4.6)</p> <p>M3. LT I can evaluate the six inverse trigonometric functions. (Section 4.7)</p> <p>M4. LT I can evaluate compositions of trigonometric functions. (Section 4.7)</p> <p>N1. LT I can solve real-life problems involving trigonometric functions, right triangles, and directional bearings (Section 4.8)</p> <p>O1. LT I can use the law of sines to solve triangles (Section 6.1)</p>		
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		<p>O2. LT Analyze and solve triangles in the SSA case and determine if there are 0, 1, or 2 triangles (Section 6.1)</p> <p>O3. LT I can find the area of a triangle using SAS area (Section 6.1)</p> <p>P1. LT I can use the law of cosines to solve triangles (Section 6.2)</p> <p>P2. LT I can use Heron's formula to find the area of a triangle (Section 6.2)</p> <p>Q1. LT I can recognize and write the fundamental identities (Section 5.1)</p> <p>Q2. LT I can use fundamental trigonometric identities to evaluate, simplify, and rewrite the trigonometric functions and expressions. (Section 5.1)</p>		
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		<p>Q3. LT I can verify trigonometric identities (Section 5.2)</p> <p>R1. LT I can solve trigonometric equations using algebraic techniques, factoring, and inverse trigonometric functions. (Section 5.3)</p> <p>R2. LT I can solve trigonometric equations that involve multiple angles. (Section 5.3)</p> <p>S1. LT I can use sum and difference, double angle, and half-angle angle formulas to simplify, solve, and verify trig identities. (Sections 5.4 & 5.5)</p>		